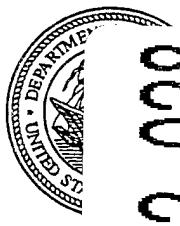
AFCTN Test Report 93-028

AFCTB-ID 93-060



Technical Raster Transfer

Using:

Harris Corporation Data

MIL-R-28002A (Raster)

Quick Short Test Report

09 June 1993

Prepared for

Electronic Systems Center

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Contents

1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-Cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Harris Corporation's interpretation and use of the CALS standards, in transferring technical Raster data. Harris used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 9-track magnetic tape. The data submitted was part of a test that Harris Corporation is running with the AFCTB to check the new versions of the tapetool software program. Harris Corporation has developed a large data set which checks the software at high file counts.

2. Test Parameters

Test Plan: AFCTB 93-060

Date of Evaluation: 9 June 1993

Evaluator:
George Elwood
Air Force CALS Test Bed
HQ ESC/ENCP
4027 Cololnel Glenn Hwy
Suite 200
Dayton OH 45431-1672

Data Originator:
Duane Bishop
Harris Corporation
301 North Washington Street
Bellevue NE 68005
(402) 293-3395

Data Description: Technical Manual Test
26 Document Declaration files
100+ Raster files

Data Source System:

1840

HARDWARE

Gateway *2000 486/33*
Overland Data 9-Track Tape Drive

SOFTWARE

AFCTN *Tapetool v1.2.9*

Raster

HARDWARE

Gateway *2000 486/33*

SOFTWARE

Inset Systems *HiJaak*

Evaluation Tools Used:

MIL-STD-1840A (TAPE)

SUN 3/280

- AFCTN *Tapetool v1.2.9 UNIX*
- AGFA Compugraphics *CAPS/CALS v40.4*
- Texas Instruments (TI) *Tapetool v1.0.1*

PC 486/50

- AFCTN *Tapetool v1.2.9 DOS*

MIL-R-28002 (Raster)

SUN SparcStation 2

- ArborText *g42tiff*
- Carberry *CADLeaf Plus 3.1*
- AFCTN *validg4*
- AFCTN *calstb.475*
- IGES Data Anaylsis (IDA) *IGESView 3.0*
- Island Graphics *IslandPaint 3.0*

PC 486/50

- AFCTN *validg4*
- IDA *IGESView Windows*
- Inset Systems *HiJaak V2.1*
- Inset Systems *HiJaak Window V1.0*
- Xerox *Ventura Publisher*

Standards Tested:

MIL-STD-1840A
MIL-R-28002A

3. 1840A Analysis

3.1 External Packaging

The tape arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a box in accordance with ASTM D 3951. The exterior of the box was marked with a magnetic tape warning label as required by MIL-STD-1840A, para. 5.3.1.3.

The tape was enclosed in a barrier bag as required by MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape reel showed the required label indicating the recording density as required by MIL-STD-1840A, para. 5.3.1. Enclosed in the box was a packing list showing all files that were recorded on the tape.

3.2 Transmission Envelope

The 9-track tape received by the AFCTB contained MIL-STD-1840A files. The files were named per the standard conventions.

3.2.1 Tape Formats

The tape was run through the AFCTN *Tapetool v1.2.9* utility. No errors were encountered while evaluating the contents of the tape labels.

The tape was read using the AGFA *CAPS read1840A* utility which stopped processing the files after the 20th document had been reached. This is the limit of the AGFA software.

The tape was read using the TI *Tapetool v1.0.1*.

While the tape meets the CALS MIL-STD-1840A requirements, discussion between Harris Corporation and the AFCTB indicated errors in the *Tapetool* utility. Large file sets can not be handled by the tapetools because of memory limitation. A special release of the *Tapetool* was made for Harris in an effort to get around the current file limitations. This release indicated further errors which will be researched for a possible release.

Errors were generated during the merge function in *Tapetool* which resulted in bad Raster files. *Tapetool* was unable to pad the end of the Raster files to the correct length. This error will be corrected in release 1.2.10 of *Tapetool*.

3.2.2 Declaration and Header Fields

No errors were found in the Document Declaration file and data file headers.

This portion of the tape meets the CALS MIL-STD-1840A requirements.

4. IGES Analysis

No Initial Graphics Exchange Specification (IGES) files were included on this tape.

5. SGML Analysis

No Standard Generalized Markup Language (SGML) files were included on this tape.

6. Raster Analysis

The tape contained over 100 Raster files. The large files were evaluated using the AFCTN *validg4* utility. This program reported that all evaluated files failed to meet the CALS MIL-R-28002A specification. The error was traced to missing End-of-file (EOF) coding. This coding was dropped during the tape write procedure when *Tapetool* dropped the last incomplete block.

Harris also provided copies of the same files on a 3.5" disk. These files were shown to be variable length records and the EOF codes were present. A sample of these files was evaluated using the AFCTN *validg4* utility, which reported all of the tested files meet the CALS MIL-R-28002A specification.

A sample of the files from the 3.5" disk was read into the AFCTN *calstb.475* viewing utility. No problems were noted.

The AFCTB has several tools for viewing Raster files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings. A sample of the files from the 3.5" disk were used for these evaluations.

The files were converted using Arbortext's *g42tiff* utility without a reported error. The resulting files were read into Island Graphics' *IslandPaint* and displayed.

The Raster files were read into Carberry's *CADLeaf* software without a reported error and images were displayed.

The files were read into IDA's *IGESView* and *IGESView for Windows* without a reported error.

The files were read into Inset Systems' *HiJaak for Windows* without a reported error.

The Raster files were converted using Rosetta Technologies' *Prepare* without a reported error. The resulting files were read into *Preview* and displayed.

The Raster files on the tape were bad because of the missing EOF coding. The same files provided on the 3.5" disk were found to be correct. The Raster files on the tape did not meet the CALS MIL-R-28002A specification.

7. CGM Analysis

No Computer Graphics Metafile (CGM) files were included on this tape.

8. Conclusions and Recommendations

The physical tape structure was reported as meeting the CALS MIL-STD-1840A requirements.

All Raster files from the tape were evaluated as being bad. The errors were traced to missing EOF coding caused during the tape write procedure. The same files sent on a 3.5" disk were found to be correct. The Raster files, from the 3.5" disk, meet the CALS MIL-R-28002A specification.

Errors were found during the evaluation process of the Raster files. The errors were traced to the way the AFCTN *Tapetool* utility wrote the tape, dropping the complete last block. The tape does not meet the CALS MIL-STD-1840A requirements.

9. Appendix A - Tapetool Report Logs

9.1 Tape Catalog

Air Force CALS Test Network Catalog Evaluation - Version 1.2; Release 9 (O)

Standards referenced:
MIL-STD-1840A (1987) - Automated Interchange of Technical Information
ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes
for Information Interchange
ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Mon Jun 7 15:40:29 1993

MIL-STD-1840A File Catalog

File Set Directory: /cals/u129/Set014

Page: 1

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D001	Document Declaration	D/00260	02048/000001	Extracted
D002	Document Declaration	D/00260	02048/000001	Extracted

<<<<< PART OF LOG REMOVED HERE >>>>>

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D026	Document Declaration	D/00260	02048/000001	Extracted
D001R001	Raster	F/00128	02048/000017	Extracted
D001R002	Raster	F/00128	02048/000005	Extracted

<<<<< PART OF LOG REMOVED HERE >>>>>

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D026R008	Raster	F/00128	02048/000017	Extracted
D026R009	Raster	F/00128	02048/000013	Extracted
D026R010	Raster	F/00128	02048/000007	Extracted

Catalog Process terminated normally.

9.2 Tape Evaluation Log

```
Air Force CALS Test Network Tape Evaluation - Version 1.2; Release 9 (0)
  Standards referenced:
    ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes
                        for Information Interchange
    ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Mon Jun  7 15:35:06 1993

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...

/dev/rmt0 allocated.

VOL1CALS01                                                              4

  Label Identifier: VOL1
  Volume Identifier: CALS01
  Volume Accessibility:
  Owner Identifier:
  Label Standard Version: 4

HDR1D001            CALS0100010001000000 93140 00000 000000

  Label Identifier: HDR1
  File Identifier: D001
  File Set Identifier: CALS01
  File Section Number: 0001
  File Sequence Number: 0001
  Generation Number: 0000
  Generation Version Number: 00
  Creation Date:  93140
  Expiration Date:  00000
  File Accessibility:
  Block Count: 000000
  Implementation Identifier:

HDR2D0204800260                                    00

  Label Identifier: HDR2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00

********** Tape Mark **********
```

```
  Actual Block Size Found = 2048 Bytes.

  Number of data blocks read = 1.

************ Tape Mark ***************

EOF1D001            CALS0100010001000000 93140 00000 000001

  Label Identifier: EOF1
  File Identifier: D001
  File Set Identifier: CALS01
  File Section Number: 0001
  File Sequence Number: 0001
  Generation Number: 0000
  Generation Version Number: 00
  Creation Date:  93140
  Expiration Date:  00000
  File Accessibility:
  Block Count: 000001
  Implementation Identifier:

EOF2D0204800260                                    00

  Label Identifier: EOF2
  Recording Format: D
  Block Length: 02048
  Record Length: 00260
  Offset Length: 00

************ Tape Mark ***************

                     <<<<< PART OF LOG REMOVED HERE >>>>>

************ Tape Mark ***************

############ End of Volume CALS01 ###############

############ End Of Tape File Set ###############

Deallocating /dev/rmt0...

Tape Import Process terminated normally.
```

9.3 Tape File Set Validation Log

```
Air Force CALS Test Network File Set Evaluation - Version 1.2; Release 9 (0)

  Standards referenced:
    MIL-STD-1840A (1987) - Automated Interchange of Technical Information

Mon Jun  7 15:40:31 1993

MIL-STD-1840A File Set Evaluation Log

File Set: Set014

Found file: D001
Extracting Document Declaration Header Records...
Evaluating Document Declaration Header Records...

srcsys: HARRIS CORP  301 WASHINGTON ST. BELLEVUE,NE  68005-2558
srcdocid: WL177058         64755 B              00010001UMCHN
srcrelid: NONE
chglvl: 1,B,19901220
dteisu: 19920430
dstsys: EDCARS System.  SM-ALC/TILAA, 3200 Peacekeeper Way, Suite 1, McClellan AFB, CA
dstdocid: WL177058         64755 B              00010001UMCHN
dstrelid: NONE
dtetrn: 19930520
dlvacc: F04606-91-D-0159,DELIVERY ORDER No. 0004,CDRL A003
filcnt: R39
ttlcls: UNCLASSIFIED
doccls: UNCLASSIFIED
doctyp: Product Data
docttl: WIRE LIST,DEMULTIPLEXER STAGE 1

                    <<<<< PART OF LOG REMOVED HERE >>>>>

Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

No errors were encountered in Document D026.

No errors were encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.
```

10. Appendix D - Detailed Raster Analysis

10.1 File D001R001

10.1.1 Output IGESView